REMARKS

Claims 115, 119-126, and 161-165 are pending. Applicants gratefully acknowledge the allowance of claims 115, 123-126, and 161. Prior dependent claims 162 was indicated as defining patentable subject matter, but was objected to as depending upon a non-allowed base claim. Claim 162 has been amended to independent form by incorporating each of the elements of claim 119 from which it previously depended, so that claim 162 should also now be in condition for allowance.

Prior claims 138 and 141 were treated as having been canceled from the application, while amendments to prior claim 118 have not been entered. Claims 118, 138, and 141 are canceled in the present amendment so as to clarify issues now before the Examiner. Claims 119-122 were rejected as allegedly being unpatentable over the cited art.

Reexamination and reconsideration of all pending claims, as amended, are respectfully requested.

Examiner Interview

Applicants thank the Examiner for the courtesy shown to applicants' undersigned representative in an interview conducted on December 15, 2003. Applicants discussed prior claims 118, 139, and 141, along with proposed new claims 163-165 as added herein. Applicants also discussed the articulable endoscopic surgical instrument and pivotal coupling of claim 119, and agreed to document in writing differences between applicant's claimed invention and the Wilk, and Heer et al. references (or any reasonable combination thereof), as provided hereinbelow. Final agreement was not reached, although the Examiner did agree to consider applicants' claims and arguments.

The Subject Matter of Prior Claims 118, 138 and 141

Applicants note that the subject matter of added claims 163, 164, and 165 correspond exactly to the subject matter of prior claims 138, 118, and 141, respectively, as Applicants sought to amend those claims in a prior Amendment under 37 C.F.R. § 1.116, filed

on November 27, 2002. Applicants note that the Examiner declined to enter amendments to claims 138 and 141, treating those claims as having been canceled and citing M.P.E.P. §1214.06. Likewise, amendments to claim 118 (so as to make that claim depend from claim 138) were not entered, again citing M.P.E.P §1214.06.

Applicants respectfully note that section §1214 of the M.P.E.P. specifies procedures to be followed in an application upon its return to *ex parte* prosecution after entry of a decision by the Board. As noted by the Examiner, §1214.06 addresses the actions to be taken when the Examiner is sustained in whole or in part, and sets forth limitations on the procedures under which the Applicant is allowed to continue prosecution. However, since return of the present application from the Board, Applicants have filed a Request for Continued Examination (RCE). Hence, pursuant to §706.07(h)(XI)(A) of the M.P.E.P., "the filing of an RCE (accompanied by the fee and a submission) after a decision by the Board of Patent Appeals and Interferences, but before the filing of a Notice of Appeal to the Court of Appeals for the Federal Circuit. . . ***result(s) in the finality of the rejection or action being withdrawn and the submission being considered.***" Moreover, §706.07(h)(XI)(A) explicitly references M.P.E.P. § 706.03(w), which describes the limitations on the effects of the prior appeal, and specifically the "*res judicata*" effect of a Decision by the Board of Patent Appeals and Interferences. Per §706.03(w), while *res judicata* may constitute a proper ground for rejection, the courts have materially restricted the use of *res judicata* rejections so that such a rejection should "be applied only where the earlier decision ***was a decision*** of the Board of Appeals." Per §706.03(w), such *res judicata* rejections are appropriate after the Board has sustained a rejection of ***the same claim*** (or a patentably non-distinct claim) ***if*** the prior adjudication on that claim came down from the Board of Appeals. While the §706.07(h)(XI)(A) also explicitly references § 1214.06, per the wording of the former the latter comes back into play only regarding new grounds for rejection from the Board.

Regarding the subject matter of current claim 163 (corresponding to appealed claim 139), the decision of December 22, 2000 in the present application stated the following on page 2: "Claim 139 is objected to as being dependent upon a rejected base claim." Applicants see no rejection of claim 139 by (or sustained by) the Board. Moreover, the Examiner previously

held claim 139 to be patentably distinct from appealed claim 138 (the rejection which was sustained by the Board). Applicants do now understand that the Examiner was following the instructions of § 1214.06 in canceling prior claims 138 and 141, so that Applicant's prior amendments to claim 118 made little sense. Applicants do not, however, see any basis for asserting that applicants cannot, after proper filing of an RCE, seek patent protection for the subject matter of prior claim 139, which has was not rejected by the Board nor the examiner, and was in fact indicated as defining patentable subject matter (although objected to on formal grounds).

As Applicants have complied with all requirements for a proper RCE, as the M.P.E.P. requires that appropriate amendments (such as those now being requested) after proper filing of an RCE be entered, and as the M.P.E.P. provides no basis for declining to enter proposed added claims (such as adding claim 163) after proper filing of an RCE, nor for rejecting those claims under *res judicata*, Applicants respectfully request that claims 163-165 be entered and examined.

Rejection of Claims 119-122

Claims 119-122 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 5,217,003 to Wilk in view of an article by Heer et al. Such a rejection is traversed as follows.

Claim 119 recites a medical robotic system including a controller having a handle which produces a proportional movement of an articulable endoscopic surgical instrument. The articulable surgical instrument of claim 119 is held by a coupler that pivotally attaches to a robotic arm. Articulable endoscopic surgical instruments are disclosed in the present application at least with reference to the embodiment of Fig. 11 (showing an instrument having a forearm shaft 174 coupled to an end effector 170 by a wrist 172 so as to provide a degree of freedom within a patient as illustrated by double-headed arrow 164m) and with reference to Fig. 14 (showing an articulable shaft 268R coupling end effector 270R to an endoscope body 260 within a patient body), as well as in the associated text. In contrast, Wilk describes only unarticulable endoscopic surgical instruments having an end effector supported by a rigid shaft.

In standard endoscopic surgery, a long-handled surgical instrument is inserted through a minimally invasive aperture and manipulated using a handle which remains outside the patient, as illustrated in Heer. As the surgeon will manipulate these exposed handles while viewing an endoscopic display which is offset from (and having an orientation which does not correspond to that of) the actual surgical site, it takes considerable skill to accurately manipulate the external handles so as to perform surgical functions such as tying a knot in suture. It is not surprising that rigid endoscopic instruments are used in standard endoscopic surgery, as it becomes difficult to perform mental coordinate transformation using even this simple rigid-shaft arrangement. Adding additional complexity to manual endoscopic surgery by including additional degrees of freedom within the patient by trying to make use of an articulable endoscopic surgical instrument would be highly problematic. Similarly, the Wilk reference appears, at most, to simply make use of rigid endoscopic surgical instruments such as those already in use for manual laparoscopic surgery.

The Heer et al. reference describes standard rigid endoscopic surgical instruments, as described above. Additionally, as applicants understand the Heer et al. reference, it proposes a robotic system in which a robotic surgical instrument is inserted into the patient from a fixed insertion angle, with ***all*** degrees of freedom of movement of the surgical end effector being provided by inserted joints of the surgical instrument. As illustrated in the Heer et al. reference, to provide useful movement of the end effector, such a robotic structure would generally involve a quite large surgical instrument cross-section at the incision point. In contrast, applicant's invention makes use of a surgical instrument which is pivotally coupled to the robotic arm. Support for this coupler was addressed in Interference 104,645 (See the enclosed Decision on Preliminary Motions of March 30, 2002, pp. 43, 47-49), and can be found, for example, in Fig. 11 as the two concentric circles pivotally coupling robotic arm 188 to shaft 174, as well as the slightly enlarged cross section structure extending distally along the shaft from arm 188 toward pivot point 176. Additional support for the pivotal coupler may be seen in Figure 7 and 9. The use of an external robot arm with a pivotal coupler holding the insertable surgical instrument allows positional movement (for example) of the end effector to be effected by external robotic arm movements, thereby taking advantage of pivotal movement of an instrument shaft extending

though an incision, rather than relying entirely on instrument degrees of freedom within the patient body, significantly reducing the cross-sectional size of the inserted instrument. Such an arrangement is not reasonably taught or suggested by Heer et al., nor by any combination of the Heer et al. and Wilk references.

As explained in detail throughout the present application, and particularly with reference to the embodiments of Figs. 10 and 11, providing articulable endoscopic surgical instruments on a robotic surgery system allows the system operator to interact naturally with the end effector with additional degrees of freedom and with instruments having small cross-sections, giving the operator the perception that the operator's hands are directly controlling the end effectors while avoiding patient trauma. As the use of a robotic system can avoid any requirement that the surgeon try to perform mental coordinate transformations despite the additional degrees of freedom, applicant recognized and described how such a system can allow the operator to take advantage of the additional degrees of freedom provided by an articulable endoscopic surgical instrument, while also taking advantage of robotic movements effected outside the patient body. Neither Wilk nor Heer et al. reasonably suggest an arrangement in which the degrees of freedom of the end effector are split between external (with an external robot arm pivotally coupled to the instrument) and internal (using an articulable instrument) joints. Hence, the Wilk and Heer et al. references actually support patentability of the pending claims, as others failed to recognize the potential advantages of using pivotally coupled articulable surgical instruments in robotic surgery.

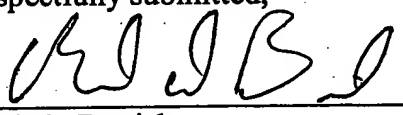
As no reasonable combination of the cited art references produces the advantageous robotic system now recited by claim 119, and as claim 119 provides significant advantages over the systems of the cited art, claim 119 (and the dependent claims that depend therefrom) are now in condition for allowance.

CONCLUSION

In view of the foregoing, Applicant believes all claims now pending in this Application are in condition for allowance and an action to that end is urged.

If the Examiner believes a telephone conference would aid in the prosecution of this case in any way, please call the undersigned at 650-326-2400.

Respectfully submitted,



Mark D. Barrish
Reg. No. 36,443

TOWNSEND and TOWNSEND and CREW LLP
Two Embarcadero Center, 8th Floor
San Francisco, California 94111-3834
Tel: 650-326-2400 // Fax: 415-576-0300
MDB:nap
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